

Fast Preview

Note: This is not exactly what the published abstract will look like

<p>Joint ARM/GCSS/SPARC TWP-ICE CRM Intercomparison Study: Description, Preliminary Results, and Invitation to Participate</p> <p>Ann M Fridlind¹ (+1-212-678-5674; ann.fridlind@nasa.gov) Andrew S Ackerman¹ (andrew.ackerman@nasa.gov) Grant Allen² (grant.allen@manchester.ac.uk) Jason Beringer³ (Jason.beringer@arts.monash.edu.au) Jennifer M Comstock⁴ (Jennifer.Comstock@pnl.gov) Paul R Field⁵ (paul.field@metoffice.gov.uk) Martin Gallagher² (martin.gallagher@manchester.ac) Jorg M Hacker⁶ (Jorg.Hacker@flinders.edu.au) Timothy Hume⁷ (T.Hume@bom.gov.au) Christian Jakob⁸ (christian.jakob@sci.monash.edu.au) Guosheng Liu⁹ (liug@met.fsu.edu) Charles N Long⁴ (chuck.long@pnl.gov) James H Mather⁴ (jim.mather@pnl.gov) Peter T May⁷ (P.May@bom.gov.au) Robert F McCoy¹⁰ (rfmccoy@sandia.gov) Sally A McFarlane⁴ (sally.mcfarlane@pnl.gov) Greg M McFarquhar¹¹ (mcfarq@atmos.uiuc.edu) Patrick Minnis¹² (p.minnis@nasa.gov) Jon C Petch⁵ (Jon.Petch@MetOffice.gov.uk) Courtney Schumacher¹³ (courtney@ariel.met.tamu.edu) David D Turner¹⁴ (dturner@ssec.wisc.edu) James A Whiteway¹⁵ (whiteway@yorku.ca) Christopher R Williams¹⁶ (Christopher.R.Williams@noaa.gov) Paul I Williams² (paul.i.williams@manchester.ac.uk) Shaocheng Xie¹⁷ (xie2@llnl.gov) Minghua Zhang¹⁸ (mzhang@notes.cc.sunysb.edu)</p> <p>¹NASA, Goddard Institute for Space Studies, New York, NY 10025, United States ²University of Manchester, Centre for Atmospheric Science, Manchester M13 9PL, United Kingdom ³Monash University, School of Geography and Environmental Science, Melbourne</p>	<p>Meeting: 2008 Fall Meeting</p> <p>Reference Number:13019</p> <p>Membership Number: Ann M Fridlind AGU - 10207311</p> <p>Contact Information: Ann M Fridlind NASA Goddard Institute for Space Studies New York, NY 10025, United States ph : +1-212-678-5674 fax : +1-212-678-5552 e-mail : ann.fridlind@nasa.gov</p> <p>Student rate: Not Applicable</p> <p>Willing to chair a session:</p> <p>Meeting Section: A - Atmospheric Sciences</p> <p>Special Session: A26 - Physics and Chemistry of the Upper Troposphere and Lower Stratosphere (UTLS)</p> <p>Index Terms: 320,368,3311,3314,3362</p> <p>Theme:</p> <p>Material presented: 0%</p> <p>Contributed</p> <p>Poster presentation requested:</p> <p>Scheduling request:</p>
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The 2006 Tropical Warm Pool - International Cloud Experiment (TWP-ICE) is 'the first field program in the tropics that attempted to describe the evolution of tropical convection, including the large-scale heat, moisture, and momentum budgets at 3-hourly time resolution, while at the same time obtaining detailed observations of cloud properties and the impact of the clouds on the environment' [May et al., 2008]. A cloud-resolving model (CRM) intercomparison based on TWP-ICE is now being undertaken by the Atmospheric Radiation Measurement (ARM), GEWEX Cloud Systems Study (GCSS), and Stratospheric Processes And their Role in Climate (SPARC) programs. We summarize the 16-day case study and the wealth of data being used to provide initial and boundary conditions, and evaluate some preliminary findings in the context of existing theories of moisture evolution in the tropical tropopause layer (TTL). Overall, simulated cloud fields evolve realistically by many measures. Budgets indicate that simulated convective flux convergence of water vapor is always positive or near zero at TTL elevations, except locally at lower levels during the driest suppressed monsoon conditions, while simulated water vapor deposition to hydrometeors always exceeds sublimation on average at all TTL elevations over 24-hour timescales. The next largest water vapor budget term is generally the nudging required to keep domain averages consistent with observations, which is at least partly attributable to large-scale forcing terms that cannot be derived from measurements. We discuss the primary uncertainties.